

CHECKLIST

CHECKLIST: FREE PRODUCT RECOVERY PLAN

This checklist can help you to evaluate the completeness of a plan for free product recovery. As you go through the plan, answer the following questions. If you answer several questions *no*, you probably need additional information or clarification from the plan preparer. This summary should be helpful in answering some of the questions.

1. Data Needed for Review of Free Product Recovery Plan.

- | Yes | No | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Does plan contain release history and volume estimates? |
| <input type="checkbox"/> | <input type="checkbox"/> | Is the area of the free product plume defined in all directions? |
| <input type="checkbox"/> | <input type="checkbox"/> | Is the depth to water known? |
| <input type="checkbox"/> | <input type="checkbox"/> | Is the volume of free product estimated? |
| <input type="checkbox"/> | <input type="checkbox"/> | Are hydraulic conductivity and thickness of the aquifer known or estimated? |
| <input type="checkbox"/> | <input type="checkbox"/> | Is hydraulic gradient known or presented as water table contours? |
| <input type="checkbox"/> | <input type="checkbox"/> | Are the hydrocarbon type, density, and viscosity known? |

2. Is Free Product Recovery Approach Consistent With Remedial Action Objectives and Comprehensive CAP?

- | Yes | No | |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Are remedial objectives of free product recovery system clearly defined? |

- Is applicable approach (skimmer, recovery with groundwater depression, or dual-phase recovery) matched to remedial action objectives?
- Is the free product recovery approach compatible with comprehensive CAP remedy?

3. Is Active Free Product Recovery Necessary?

Yes No

- Is the volume of free product greater 50 gallons?
- Is the maximum thickness of free product in monitoring wells greater than 0.1 foot?
- Is the hydraulic conductivity of the soil greater than 10^{-5} cm/s?

4. Have All The Free Product Recovery System Design Criteria Been Evaluated?

Yes No

- Are well/drain locations specified?
- Are construction details for wells/drains specified?
- Are pumping rates and drawdown levels estimated for wells and drains (groundwater depression)?
- Are the total rates of groundwater, free product, and vapor production estimated?
- Is the discharge option for any pumped groundwater specified?
- Is pumping/skimming equipment specified and appropriate?

Are the locations of pipelines, manifolds, and separator/treatment system shown on map?

Are system startup procedures specified?

5. Is The Operation and Monitoring Plan Complete?

Yes No

Is monitoring of production rates of hydrocarbon and groundwater proposed?

Are hydrocarbon thickness and groundwater elevations to be monitored?

Are routine maintenance procedures described?

Is bi-monthly monitoring scheduled during active recovery?

Are termination criteria specified?

Is post-termination (of the recovery system) monitoring specified?

Are criteria for restarting recovery specified for the post-termination monitoring period?